CLAIMS

What is claimed is:

1. A method for rapidly screening volatile substances in a sample, said method comprising the steps of:

a) introducing a volume of said sample into a vapor delivery line;

b) volatilizing at least a portion of said volume as said volume is carried through said vapor delivery line;

c) contacting at least a portion of said volatilized volume with a sensor element, wherein said volume does not contact a substantially sorbent material before contacting said sensor element; and

d) monitoring a signal from said sensor element.

2. The method of claim 1, wherein said sensor element is an optical sensor element.

3. The method of claim 1, wherein said sensor element is an electrochemical sensor element.

4. The method of claim 1, wherein said sensor element comprises a semiconductor.

5. The method of claim 1, wherein said sensor element is coated with a chemically sensitive material to form a chemically sensitive film proximate the surface of said sensor element. see page 7, lines 5-7

6. The method of claim 1, wherein said sensor element comprises a quartz crystal.

7. The method of claim 5, wherein said sensor element is coated with a hard-soft block elastomer.

8. The method of claim 7, wherein said sensor element is coated with a silicone polyimide.

9. The method of claim 7, wherein said sensor element is coated with a block dimethylsiloxane-carbonate copolymer. a.k.a. MEM 213

10. The method of claim 5, wherein said sensor element is coated with an amorphous fluoropolymer.

11. The method of claim 10, wherein said sensor element is coated with a random copolymer of tetrafluoroethylene and perfluoro-2,2-dimethyl-1,3-dioxole.

12. The method of claim 1, wherein step c) comprises contacting at least a portion of said volatilized volume with an array of sensor elements.

13. The method of claim 1, wherein said volume is carried through said vapor delivery line by an inert carrier gas.

14. The method of claim 10, wherein said inert carrier gas is flowing through said vapor delivery line at a rate of between about 1 mL/min and about 1000 mL/min.

no antecedent basis should depend from claim 13?

15. The method of claim 14, wherein said inert carrier gas is flowing through said vapor delivery line at a rate of between about 150 mL/min and about 500 mL/min.

16. The method of claim 5, wherein said signal from said sensor element represents a measured property of said chemically sensitive film.

17. The method of claim 1, wherein said signal from said sensor element is monitored as a function of time.

18. The method of claim 17, wherein said signal is monitored with at least one frequency counter to produce data.

19. The method of claim 18, wherein said data are stored in a computer.

20. The method of claim 1, further comprising the step of controlling the flow of said inert carrier gas through said vapor delivery line with flow controllers in communication with a computer.

21. A method for rapidly screening volatile substances in a sample, said method comprising the steps of:

a) introducing a volume of said sample into a vapor delivery line;

b) volatilizing at least a portion of said volume as said volume is carried through said vapor delivery line;

c) contacting at least a portion of said volatilized volume with a sensor element comprising a quartz crystal and a chemically sensitive film proximate the surface of said crystal, wherein said volume does not contact a substantially sorbent material before contacting said sensor element; and

d) monitoring a measured property of said chemically sensitive film as a function of time.

22. An apparatus for rapidly screening volatile substances in a sample, said apparatus comprising:

a) an injector;

b) a vapor delivery line in fluid communication with said injector;

c) a sensor element in fluid communication with said vapor delivery line and positioned downstream of said injector and said vapor delivery line, wherein all components upstream of said sensor element are substantially free of sorbent materials; and

d) a monitor in communication with said sensor element.

23. The apparatus of claim 22, wherein said sensor element is an optical sensor element.

24. The apparatus of claim 22, wherein said sensor element is an electrochemical sensor element.

25. The apparatus of claim 22, wherein said sensor element comprises a semiconductor.

26. The apparatus of claim 22, wherein said sensor element is coated with a chemically sensitive material to form a chemically sensitive film proximate the surface of said sensor element.

27. The apparatus of claim 22, wherein said sensor element comprises a quartz crystal.

28. The apparatus of claim 26, wherein said sensor element is coated with a hard-soft block elastomer.

29. The apparatus of claim 28, wherein said sensor element is coated with a silicone polyimide.

30. The apparatus of claim 28, wherein said sensor element is coated with a block dimethylsiloxane-carbonate copolymer.

31. The apparatus of claim 26, wherein said sensor element is coated with an amorphous fluoropolymer.

32. The apparatus of claim 31, wherein said sensor element is coated with a random copolymer of tetrafluoroethylene and perfluoro-2,2-dimethyl-1,3-dioxole.

33. The apparatus of claim 22, comprising an array of sensor elements in fluid communication with said vapor delivery line.

34. The apparatus of claim 26, wherein said monitor is adapted to receive a signal from said sensor element representing a measured property of said chemically sensitive film.

35. The apparatus of claim 34, wherein said monitor comprises a frequency counter to produce data representing said signal as a function of time.

36. The apparatus of claim 35, wherein said monitor further comprises a computer adapted to store said data.